

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/B2005/000311

International filing date (day/month/year)
04.02.2005

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
C08K3/22, C08K5/098, C08L23/02, C08K3/18

Applicant
CLARIANT INTERNATIONAL LTD

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/000311

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/000311

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	6,10
	No: Claims	1-5,7-9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Paragraph V:

1. Relevant cited prior art:

D1: US-A-4 594 382

not in Prio ISR

D2: GB-A-1 080 619

_____ " _____

D3: US-A-3 168 505

_____ " _____

D4: US-A-4 284 762

D5: DATABASE WPI Section Ch, Week 197722 Derwent Publications
Ltd., London, GB; Class A17, AN 1977-38833Y & JP-A-52 049258

2. Novelty and inventive step

Polyolefinic compositions comprising small amounts of a hydrated compound according to present claim 1 are already known in the art.

2.1 D1 relates to thermally stabilized carboxyl-containing ethylene copolymers containing contains a hydrated compound which dehydrates above 100°C to give improved melt flow when heated (claim 1). The ethylene copolymer comprises up to 5 wt.-% of the composition, preferably 0.01-0.45, more preferably 0.1-0.15 wt.-% of the hydrate compound (col 1, l 60-68; claims 1, 11) and includes hydrated metallic salts of organic acids, inorganic hydrates, bimetallic hydrates and combinations of any of such hydrates (claims 4, 6, 10).

A method is also described composition adding said hydrate compound to an olefinic copolymer at high temperature, melt mixing and extruding (Examples; claim 19).

Specifically mentioned examples of hydrates relevant to the current application include trisodium citrate dihydrate, sodium tartrate dihydrate, potassium citrate, potassium tartrate, potassium sodium tartrate, calcium tartrate, magnesium citrate dibasic, sodium ammonium phosphate tetrahydrate, calcium phosphate dibasic hydrate, calcium phosphate monobasic, magnesium phosphate dibasic dihydrate, magnesium phosphate dibasic trihydrate, magnesium ammonium phosphate, sodium phosphate tribasic, and $\text{NaKHPO}_4 \cdot 7\text{H}_2\text{O}$ (cols. 3 & 4; claims 4-6, 10).

In particular Table V describes compositions comprising an ethylene-acrylic copolymer and small amounts of the hydrate compounds (Examples 7-9, 14-18).

Therefore, D1 is novelty-destroying for the subject-matter of claim 1 to 5, and 7 to 9.

D2 describes a process for producing polyolefin compositions in expanded or cellular

form produced by incorporating in the foam a hydrated salt of a Group 1A and 2A metal, the anion of the salt being phosphate, acid phosphate, sulfate, hypophosphite, chromate, tartrate, acid tartrate, citrate, acid citrate, acetone, lactate or borate, and heating (claims). Preferred hydrates include calcium tartrate hydrate, sodium tartrate tetrahydrate, and potassium citrate monohydrate (Examples 11 & 12; claims 8, 10, 11).

Thus, D2 is of relevance to the novelty merit of claims 1 to 5, and 7 to 9.

- 2.2 The broadly defined term "hydrated inorganic or organic compounds" in claim 1 encompasses a large number of possible compounds which may be added to polyolefins as is further evidenced by the small selection comprised in claims 2 to 4. In the Examples of the specification, however, merely two types of hydrated compound (namely $\text{Na}_4\text{P}_2\text{O}_7 \cdot 10\text{H}_2\text{O}$ and $\text{Na}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}$) falling under the claimed formula are shown to solve the posed technical problem.

Due to the extremely large number of claimed additive products comprised in the claims, it is unlikely all of these compounds lead to the expected technical effect when used in polyolefin mass. Indeed, the claims represent a unreasonable generalisation of the Examples of the application. The fact that some of these compounds described in the Examples of the application provide the desired technical effect cannot be taken as sufficient evidence that such a technical effect is obtained by all these compounds, since the number of compounds claimed is such that it is inherently unlikely that all of them, or at least substantially all of them, will possess the promised activity, i.e., that all provide solutions to the technical problem to be solved.

Thus, the subject-matter of these claims extends to hydrate additives which are not inventive, and does not satisfy the requirements of Article 33(3) PCT (see T939/92).

- 2.3 The disclosures D3 to D5 are concerned with reducing colouration in polyolefin resins, while D1 and D2 do not appear to address this problem. D3 appears to represent the closest prior art, as it employs similar compounds to those preferred in the current specification (e.g., sodium pyrophosphate). D3 apparently does not consider explicitly hydrated compounds, however, and the polyolefins are treated in the aqueous phase rather than under melt conditions leading to the release of water from the hydrated compounds.

Thus, notwithstanding point 2.2 above, the inventive concept underlying the application does not seem to be rendered obvious by the cited prior art.

Paragraph VIII:

1. Some of the compounds according to present claims 2 and 3 do not appear to fall under the general formula of claim 1, e.g., $\text{NH}_4\text{HC}_2\text{O}_4 \cdot \text{H}_2\text{O}$, $(\text{NH}_4)_2\text{HPO}_3 \cdot \text{H}_2\text{O}$, $\text{K}_2\text{tartrate} \cdot x \text{H}_2\text{O}$, $\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$, $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$, $\text{NaK}(\text{C}_4\text{H}_4\text{O}_6) \cdot 4 \text{H}_2\text{O}$, $\text{Na}_2\text{SO}_4 \cdot 10 \text{H}_2\text{O}$ (claim 2); $\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$, $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2 \text{H}_2\text{O}$, $\text{Na}_2\text{C}_6\text{H}_6\text{O}_7 \cdot 1.5 \text{H}_2\text{O}$, and $\text{Na}_2\text{SO}_4 \cdot 10 \text{H}_2\text{O}$ (claim 3). Hence, said claims are unclear under Article 6 PCT.